

Chapter 22 Instrument Panel

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22.1 Introduction

The installation of the instrument panel is relatively simple. The instrument panel consists of a fiberglass molded frame with aluminum inserts and is finished off with the dust cover and the defroster unit, which is created using the dust cover closeout.

While there is some latitude available in the placement of the instrument panel, the following is our recommendation. Factors that must be considered when altering the instrument panel placement area:

- Forward/aft placement – knee room, clearance for the control quadrant.
- Vertical placement – visibility over the panel, control quadrant alignment, radio & instrument clearance and the fit of the dust cover.

When you install the dust cover, you need to consider how you plan to easily remove it. We recommend using a nice, easy method of attaching such as velcro.

Also, with the typical manner of entering the Lancair ES, it is often tempting to grab the top of the dust cover and pull when adjusting the seats forward. The dust cover should be well secured or it will continually get pulled off.

Steps to Completion

- Pre-fit the instrument panel.
- Mark the location of the instrument panel.
- Install the instrument panel using the top and bottom braces.
- Pre-fit the dust cover and the dust cover closeout.
- Cut the defroster air exit opening.
- Create the defroster flange.
- Split the dust cover.
- Paint the dust cover.
- Bond the defroster in place.
- Attach the dust cover.

Supplies

We recommend that you have the following supplies on hand before starting this chapter.

- Velcro or another method of attaching the dust cover.

22.2 Parts List

Instrument panel

Item	Part Number	QTY	Description
1)	1023D-1	1	Instrument panel, flat
2)	6061T6-.500x.035	2 ft.	Aluminium tubing
3)	AN3-10A	2	Bolts
4)	AN365-1032A	5	Locknuts
5)	AN470A3-4	12	Rivets (to hold nutplates in place)
6)	AN960-10	2	Washers
7)	K1000-3	5	Nutplates
8)	MS24694-S52	10	Screws
9)	MS24694-S60	2	Screws
10)	PH-250		1/4" (6 mm) phenolic
11)	TMS60-154	1	Angle 6061T6 3/4 x 3/4 x .125 thick

Dust cover

Item	Part Number	QTY	Description
1)	1059	1	Dust cover IV/IVP/ES
2)	1060	1	Dust cover closeout IV/IVP/ES
3)			Velcro



22.3 Construction Procedures

22.3.A Pre-fitting the Instrument Panel



This section contains the pre-fit instructions for the instrument panel.

Steps...

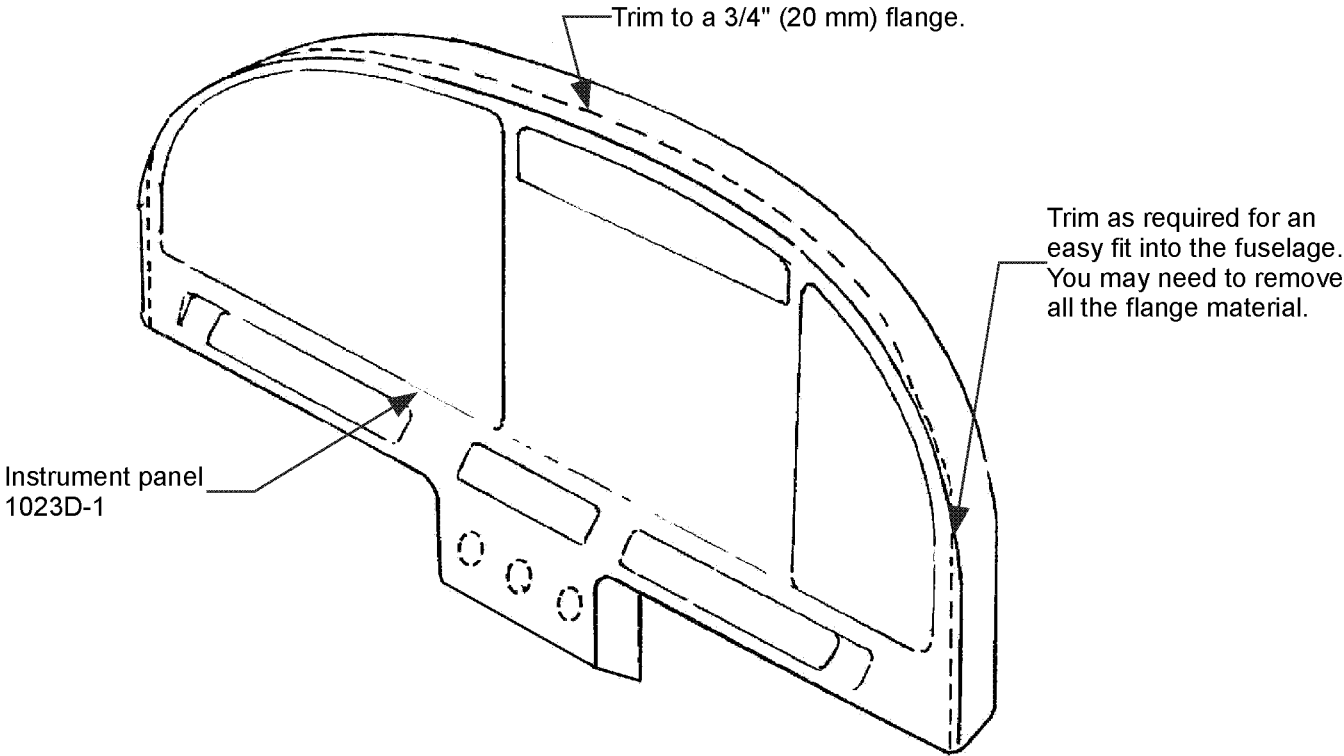
1. Trim the flange on the instrument panel (1023D-1) using the following guidelines.
 - Trim off the top flange of the panel, leaving only 3/4" (20 mm) remaining.
 - Completely remove the flange on the lower outboard sides where the attachment screws will be installed. (Do this before you start fitting into the airplane.)
 - Trim the upper sides as well, tapering the width of the flange from the removed section to the top 3/4" (20 mm) section.

Completing the trimming will allow the panel to be rough fitted into the airplane. This is only a rough fit so don't get too concerned about its final position, you'll set that next.

2. Pre-fit the instrument panel into its approximate position using Figure 22.3.A.1.
3. Slide the instrument panel into its approximate position about 19 3/4" (500 mm) behind the firewall. See Figure 22.3.B.1.

Refrain from making the panel a real tight fit because you will later regret it. Remember that your upholstery, dust cover, etc., will cover the outer 1/4" (8 mm) anyway. Also, remember that you'll need to be able to get the panel into the plane after everything else is installed. A tight fit now will require you to spend more time later grinding away your careful work to get the panel into place.

Figure 22.3.A.1 Trimming the instrument panel flange

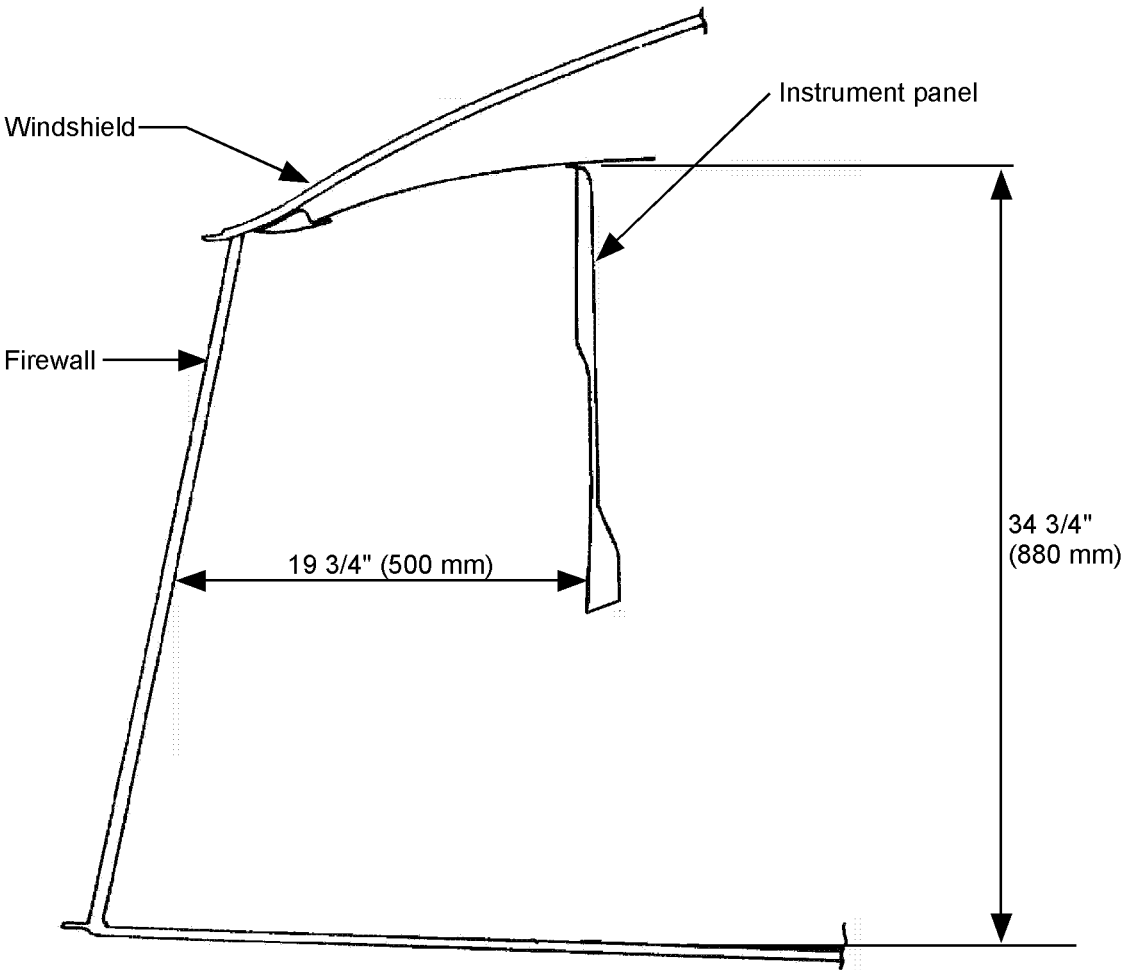


22.3.B Positioning the Instrument Panel in the Fuselage

Steps...

1. Locate the instrument panel in the fuselage using the following guidelines.
 - Vertical position – 34.75" (880 mm) from the floor to the top of the panel. Measure from the area of the floor which contains core material, i.e., in front of the pilot's side.
 - Forward/aft position – Set the panel vertical and 19.75" (500 mm) aft of the firewall at the location shown in Figure 22.3.B.1.
 - Left/right – Center the panel's vertical column (console) on the fuselage center line.
2. Mark the position of the instrument panel.
These marks will be used for the final instrument panel positioning.
3. Hold the instrument panel in place and use a quick set glue to hold the panel in position while you perform the next section.

Figure 22.3.B.1 Locating the instrument panel



22.3.C Installing the Instrument Panel

Steps...

1. Install the instrument panel's upper side BID flanges.
These are 4-BID flanges laid up on the forward side of the panel sides. Use release tape on the instrument panel so that the BID tapes will release from the panel.
2. Allow the BID tapes to cure in position.
3. Remove the instrument panel.
4. Drill the holes for the attach screws. These holes will provide the locations for the anchor nuts which install onto the BID tapes.
5. Slide four #12 drill MS24694-S52 screws into the holes.
6. Set the four nutplates, K1000-3, in place using two rivets, AN470A3-4 per nutplate.

Figure 22.3.C.1 Attaching upper side of the instrument panel – side view

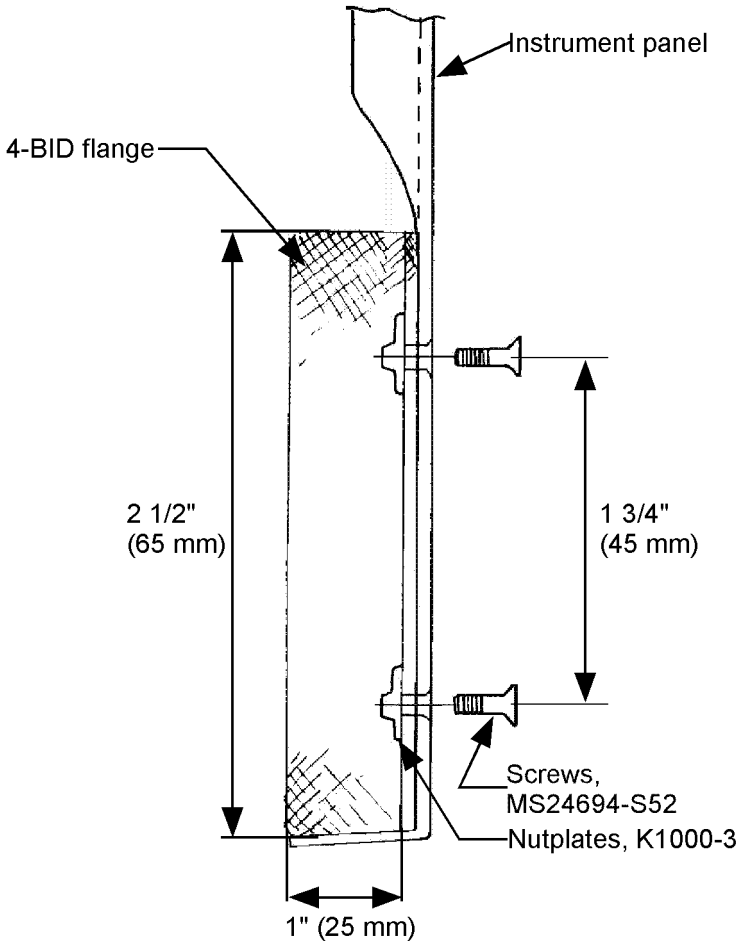
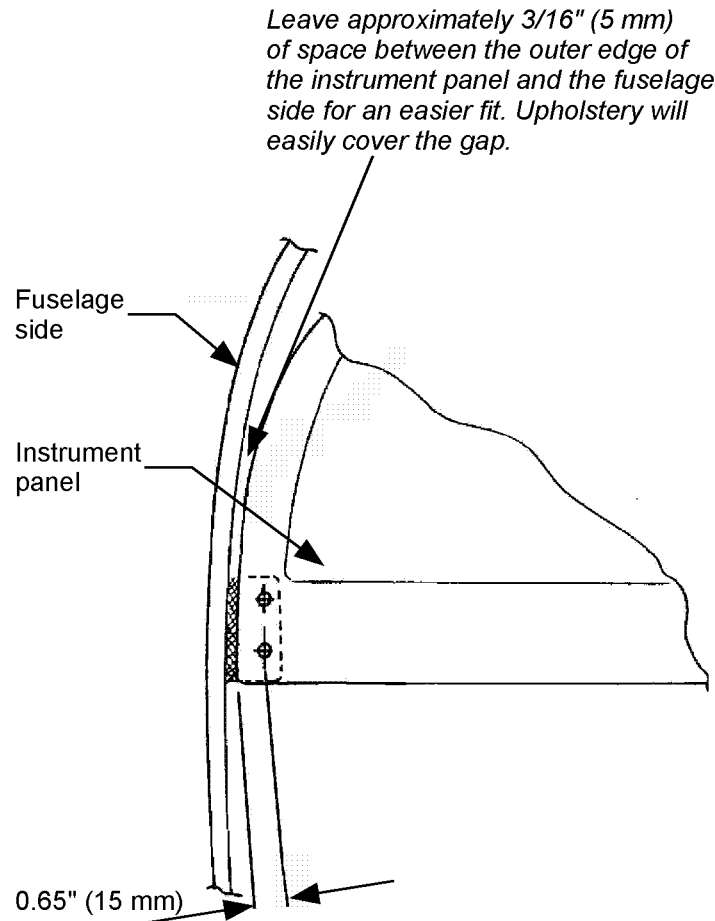


Figure 22.3.C.2 Attaching upper side of the instrument panel – aft view



Installing the Support Braces

You should not install the support braces until your panel components have been positioned. Clearance from instruments and avionics requires careful attention.

Steps...

1. Using the 2' (600 mm) long piece of 6061T6, 1/2" (13 mm) dia. aluminium tubing, cut and flatten both ends for the top support brace.
The flattened ends provide an area for the screws to be attached.
2. Attach the brace using a nutplate, K1000-3, with two rivets, AN470A3-4, and one screw, MS24694-S52, through the flange on the top of the instrument panel.
3. Extend the tube forward to the firewall and mark its mounting location.
4. Bond the phenolic to the firewall and drill and insert t for screw, MS24694-S52.
5. Finish attaching the tube using a washer, AN960-10, and a locknut, AN305-1032A.

Figure 22.3.C.3 Top support brace for the instrument panel

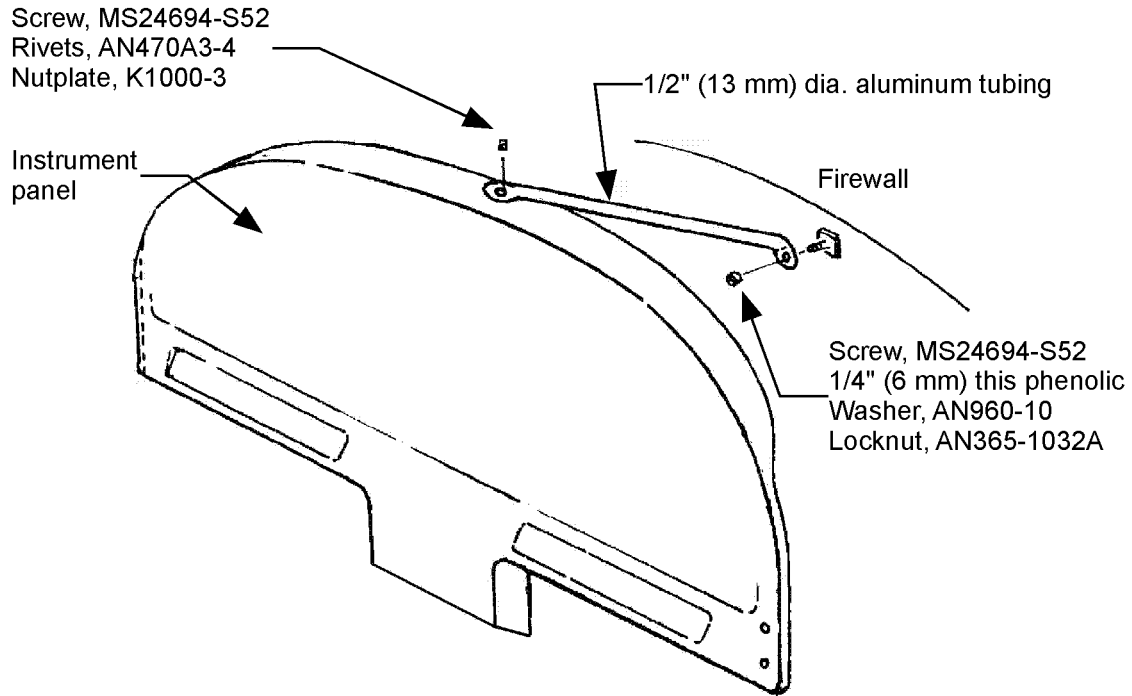
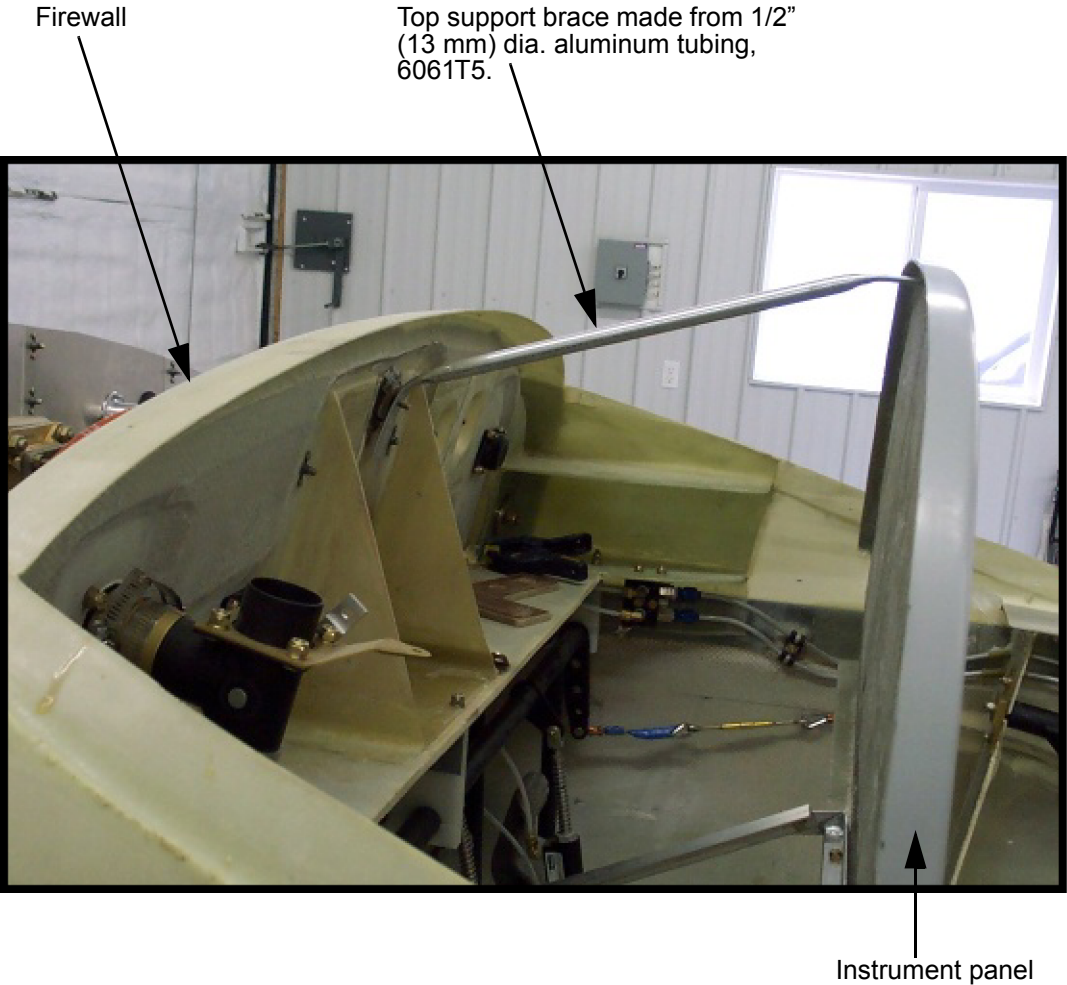


Figure 22.3.C.4 Top support brace



6. Cut two pieces of the TMS60-154, (3/4" x 3/4" angle) to the necessary length. Refer to the detail of the support brace in Figure 22.3.C.5.
7. Bend the lower support braces as required.
- The engine mount reinforcements are at an angle so the support braces will require a slight twist.
8. Install both bottom support braces using bolts, AN3-10A, with washers, AN960-10 and locknuts, AN365-1032A.

This completes the final installation of the instrument panel.

Figure 22.3.C.5 Bottom support braces for the instrument panel

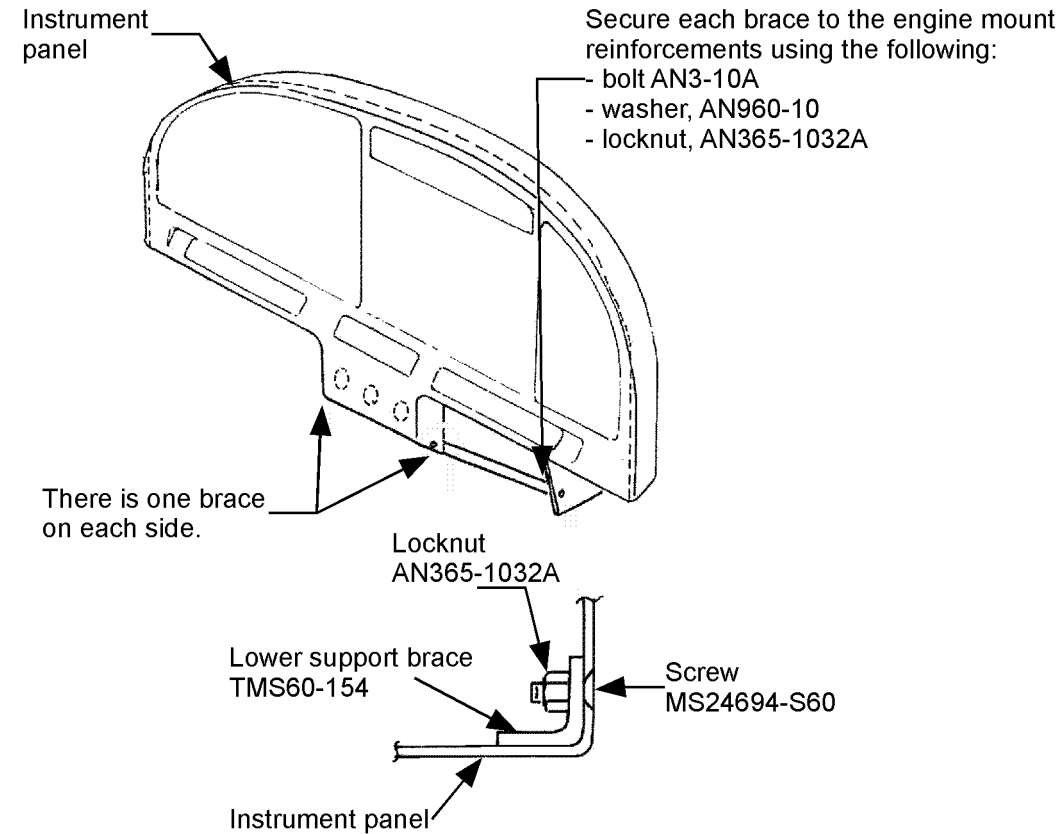


Figure 22.3.C.6 Installed instrument panel



22.3.D Installing the Instrument Panel Dust Cover

The dust cover is shipped as a two piece unit that includes the following parts:

- The dust cover, 1059, with an integrated defroster area.
- A close out panel, 1060, which creates the defroster air duct.

We recommend that the dust cover be separated from the defroster, then the defroster segment is bonded into position just below the windshield. Then dust cover can be laid on top of the T.E. of the defroster flange which makes for easier installation and removal.



This section contains the pre-fit instructions for the dust cover.

Steps...

1. Pre-fit the dust cover, 1059, by slipping it into approximate position.

Depending on how you trimmed your instrument panel, you may want or need to trim the sides a bit on the dust cover.

Tip: Remember, it will fit much tighter with the typical 1/4" (8 mm) foam with leather covering.

2. Remove the dust cover and complete the trimming.

Cutting the Defroster Air Exit Openings

Steps...

1. Mark and cut the defroster air exit holes. These are approximately 3/8" by 1 1/4" long (10 mm by 30 mm). Leave about 3/8" (10 mm) spacing between each slot.
2. Bond the defroster closeout panel, 1060, into position by bonding it to the underside and attaching it with epoxy/flox; no BID tapes are required.

The aft bond joint line should not be more than 1/2" (15 mm) deep.

Tip: This is because the cover will be split just aft of this flange joint and the split line should be kept close to the duct itself.

Figure 22.3.D.1 Dust cover showing air exit openings for defroster venting

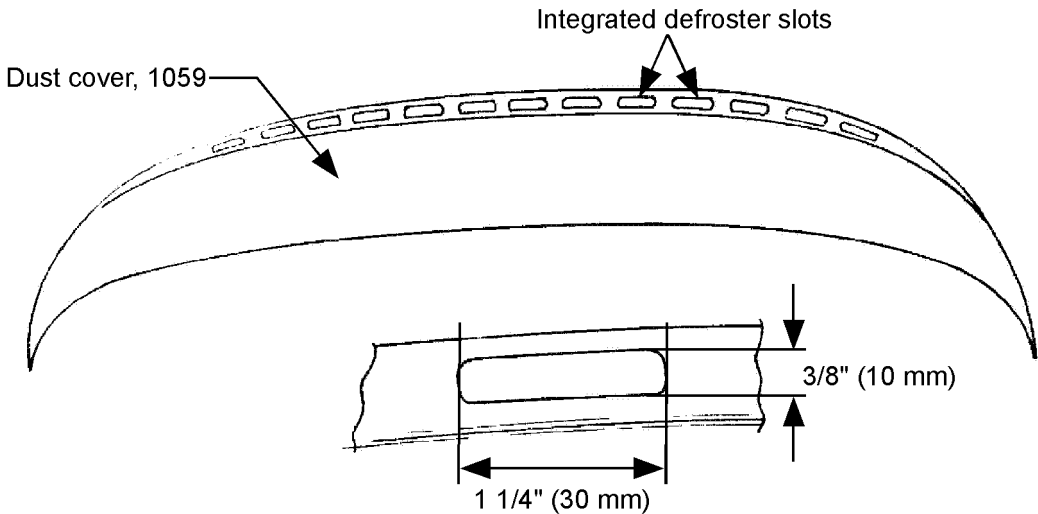
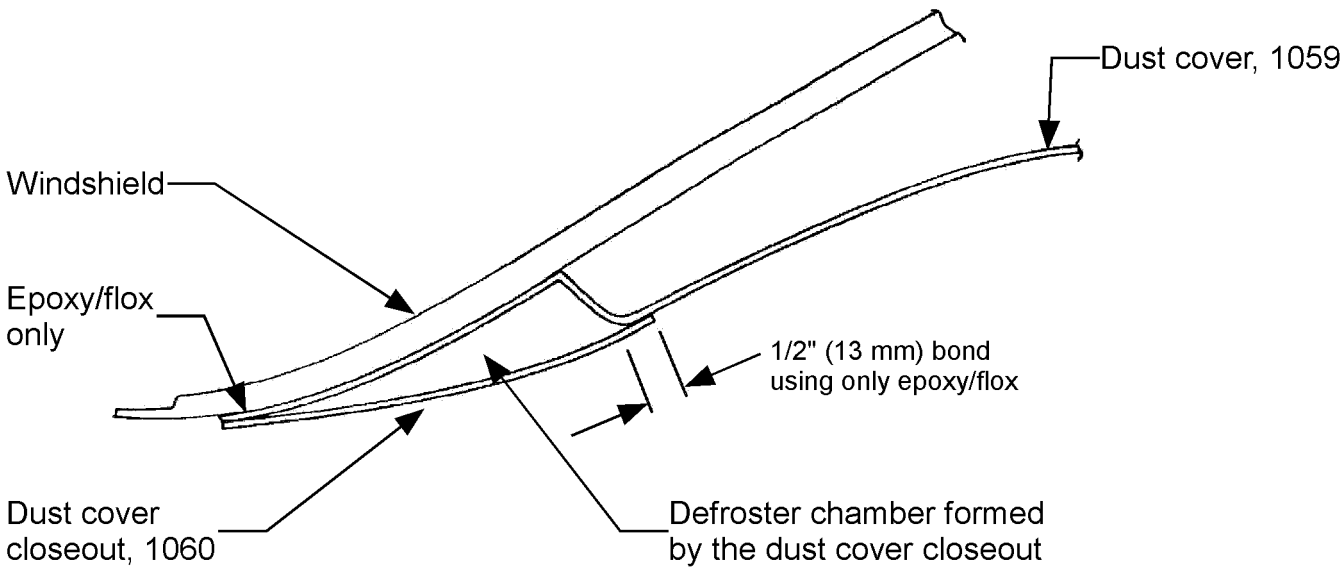


Figure 22.3.D.2 Dust cover and closeout



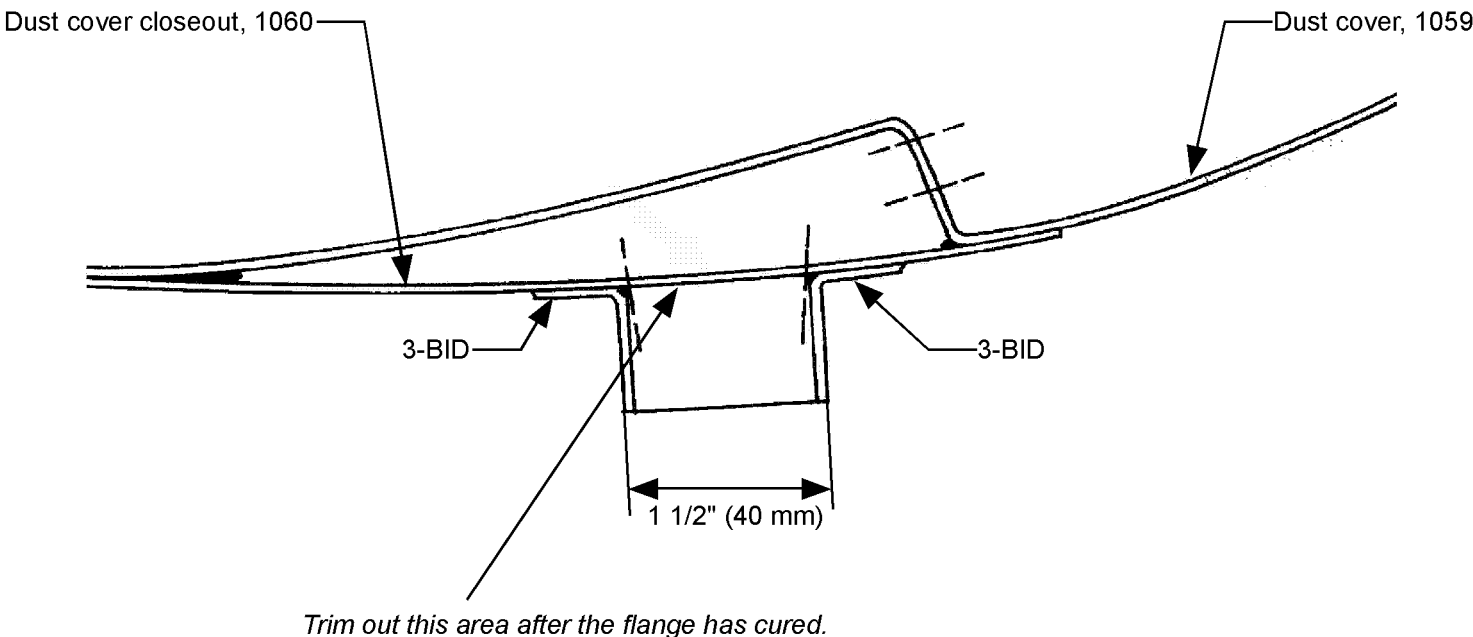
Installing the Defroster Duct Flange

The defroster duct flange only needs to be 1 1/2" (40 mm) in diameter.

Steps...

1. Using a 1 1/2" (40 mm) piece of wood dowel or equivalent, position it approximately in front of the pilot's seat.
2. Cover the dowel with plastic release tape.
3. Wrap the 3-BID around the dowel.
4. After it cures, remove the dowel and cut a hole through the dust cover closeout into the defroster chamber.
5. Blow out the cuttings with air.

Figure 22.3.D.3 Defroster duct flange



6. Make a cut about 3/4" to 1" (18-25 mm) aft of the dust cover-to-closeout overlap. Cut just aft of the joint line. See Figure 22.3.D.4

This splits the dust cover in half, leaving the forward half attached to the dust cover closeout. The forward half is now referred to as the defroster.

7. Lay the detached portion of the dust cover back on top of the defroster and temporarily attach them with a couple of dabs of instant glue. Use just enough to hold it in place for the next step.

Tip: The defroster has the potential to reflect in the windshield. By painting it flat black, or a similar dark color, it will help prevent reflection. You need to complete the painting before the defroster is permanently installed so this is a good time.

8. Using epoxy/flox, bond the defroster segment in position on the fuselage

Make sure the defroster is snug. Use shims or a few dabs of instant glue around the perimeter. Even long sticks pushing up from the floor area is an easy method to snug the defroster in place.

Attaching the Dust Cover

There are two methods of attaching the dust cover.

- Using velcro attach the forward defroster flange area and either:
 - Attach the aft end (over the panel top) using two or three machine screws with the flange of the panel top securing the anchor nuts.
- Or...*
 - Attach the aft end using a similar strip of velcro.

The dust cover is typically finished with 1/4" (6 mm) soft foam rubber. Place a bead, 1/2" (13 mm) or so. around the T.E. and cover the entire top with leather or a similar finishing material.

Figure 22.3.D.4 Dust cover separation from the closeout/defroster

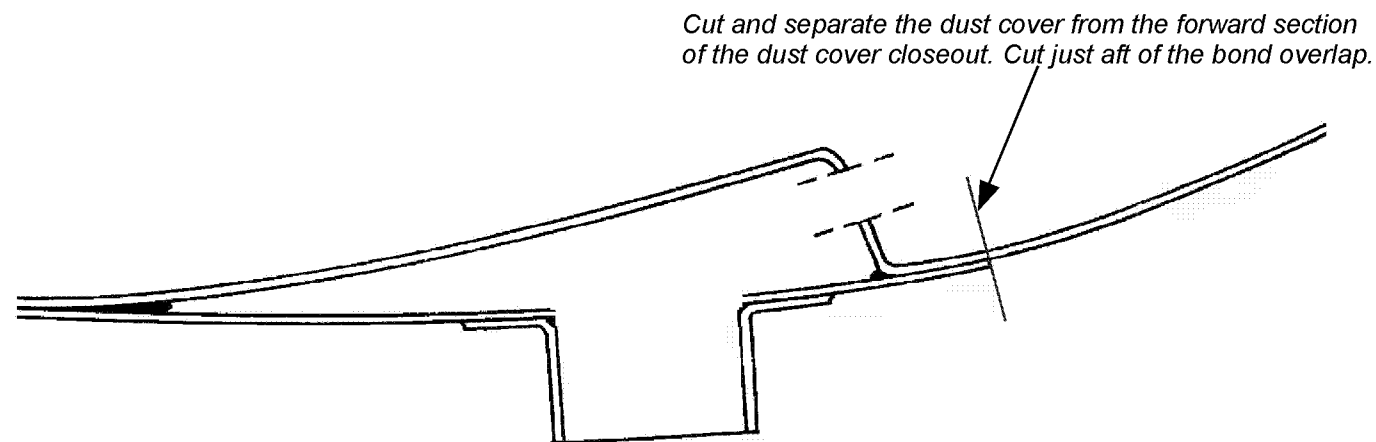


Figure 22.3.D.5 Attaching the dust cover to the defroster

